School Shop

vol. XI no. 10
JUNE, 1952

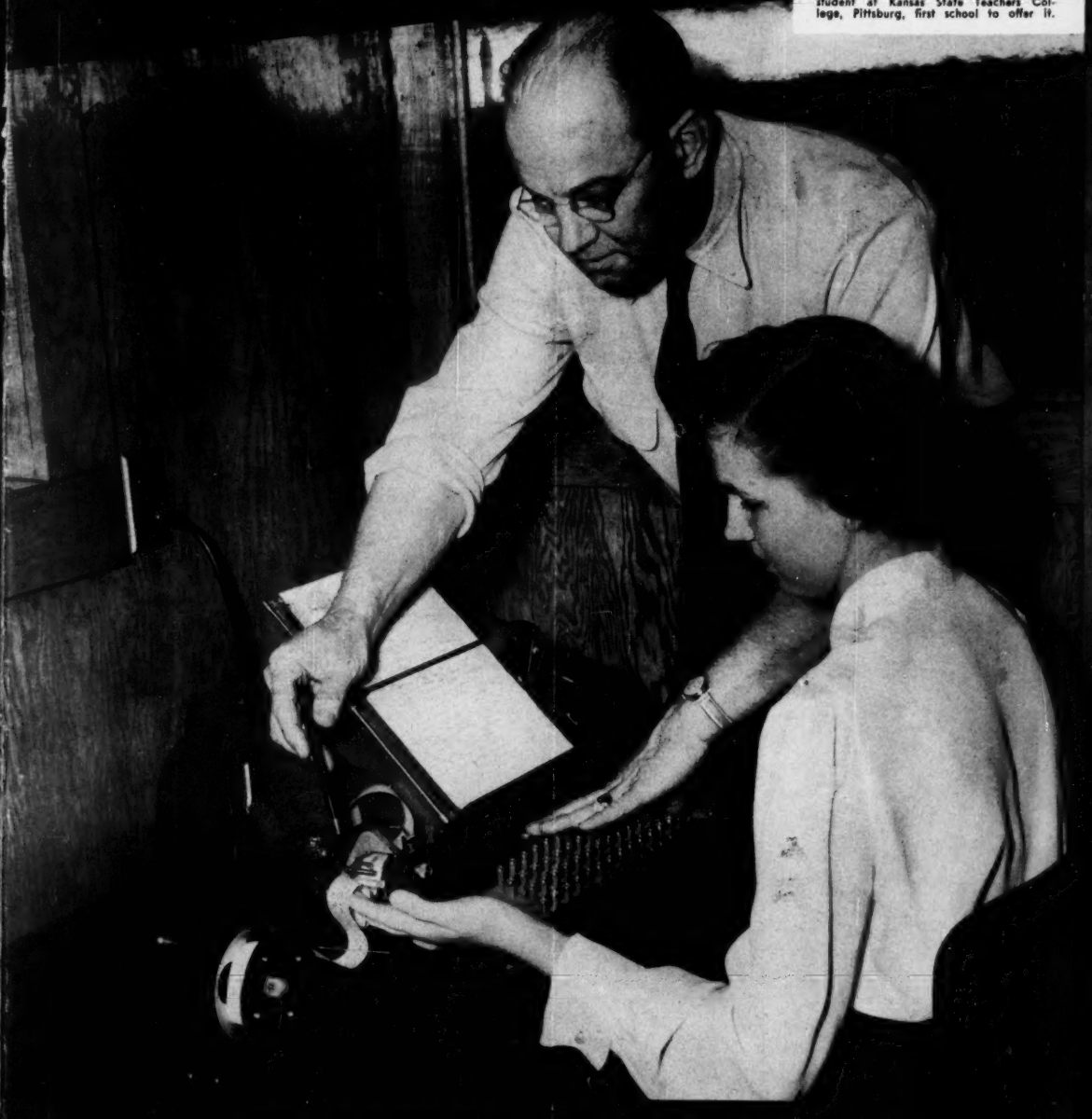
What Industrial Education Could Do for the 60 Percent
by John F. Friese

Plastic Drill-Press Vise
by Edward Allard

Railroad Rail Anvil
by Charles F. Stein

Lamps Whet Student Interest
by Harry J. Miller

On the cover: A new development in the field of graphic-arts education is instruction in the Teletypesetter Keyboard here illustrated by Leroy Brewington and a student at Kansas State Teachers College, Pittsburg, first school to offer it.



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School Shop

FOR INDUSTRIAL EDUCATION TEACHERS

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School Shop is published monthly, September through June, at Mount Morris, Illinois. Manuscripts are paid for at regular space rates and should be addressed to the Editor, School Shop, 330 South State Street, Ann Arbor, Michigan. Subscription rates, $3.00 a year; Canadian, $3.00 a year; foreign, $4.00 a year. 50 cents a copy for the April issue. Others 40 cents a copy. Printed in the U.S.A.

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Advertising Sales Offices: Midwest—School Shop, 53 West Jackson Blvd., Suite 447, Chicago 4, Harrison 7-9659. Eastern—Macintyre-Simpson & Woods, 101 Park Avenue, New York 17, Lexington 2-8998. Acceptance under section 34.64, P. L. and R., authorized.

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School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

From Infancy to Manhood

There are those in the field of industrial education who have what is popularly known as an "inferiority complex." They appear to think that they are not as other teachers are, and that, somehow or other, they are made of inferior clay. They are, as men, apart and rarely do they lift up their voices when teachers assemble to discuss their common problems.

This is particularly distressing because they have a heritage of which they have a right to be proud. They should know that, in less than 50 years, the field of education they represent has grown from infancy to manhood, and has created a pattern for attacking their problems which has been seized on by leaders in other areas of education.

If you doubt this phenomenal growth, consider the following prediction made 30 years ago:

"Society will gradually but certainly provide specific vocational schools for each useful occupation."

In the first issue of the *Vocational Education Magazine* (September 1922), the late David Snedden of Columbia University expressed this belief, basing it on the developments indicated by the following comments, which are included as part of his article.

In 1905 only a handful of men and women appreciated the great social need for vocational education . . . . .

In 1910 teachers' and business men's associations were debating the question—Is public support of vocational education desirable, feasible, and justifiable?

The World War (World War I) hastened matters somewhat. It is (in 1922) no longer fashionable to oppose public vocational education . . . . . educators have been converted to the more democratic view of the scope and values of public education.

Please note that this was written twenty-nine years ago by a man who was a prominent leader in educational affairs. In view of this it may be of interest to look briefly at some of the happenings between then and now.

Some of our readers receive a copy of the *Digest of Annual Reports of State Boards for Vocational Education.* This publication is issued each year by the Federal Security Agency, Office of Education. If you are fortunate enough to receive a copy, do you read it? Probably not! If you don't, you miss a great deal of information which bears on Dr. Snedden's prediction, and which should be of interest to those engaged in the various areas of vocational education.

For example, we find that the enrolment in federally aided classes has increased from 164,186 students in 1918, to 3,363,684, in 1950. This indicates that, insofar as the number of people served is concerned, the program has grown by several hundred percent.

Parallel to this development we find that there has been a corresponding increase in the federal funds allotted to the states for the promotion of vocational education. In 1918 the amount available for distribution was $1,655,586 while, in 1950, it had risen to $27,127,882.

Another evidence of progress appears when we find that state and local authorities have increased their expenditures from $1.75 for every federal dollar, in 1940, to $3.85 per federal dollar, in 1950.

If we add to this evidence the fact that there has been a tremendous expansion of vocational education in our regular high schools for which no reimbursement is received, we must be impressed with the fact that the field of education which we represent, and of which we are proud, has had a phenomenal growth.

Did Dr. Snedden read correctly the signs of the coming times 30 years ago? The answer is obvious.—*T.D.*

For the Good of All

More and more industrial firms are making genuine contributions to the industrial-education program in the schools. Motivated by enlightened self-interest, these firms are using their resources to promote educational activities based on sound pedagogical principles. Two current programs that deserve the attention and support of teachers are the Ford Industrial Arts Awards and the Delta School Shop Layout Contest. Both of these programs have developed a teacher interest in areas that are important to students and teachers alike and should result in lasting professional benefit. Our best wishes to both of them. —*L.W.P.*

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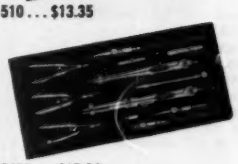

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Good School News

GRAPHIC ARTS—THE EDUCATIONAL FIELD WITH A FUTURE

American Type Founders, Department of Education, 200 Elmora Avenue, Elizabeth, New Jersey

California Schools Install Offset Printing to Broaden Instruction in Graphic Arts

Educators take action to meet increasing demand for trained workers

At the John Burroughs High School, Burbank, California, night school students receive instruction in the operation of the ATF Chief 22 offset press and platemaking equipment.

More and more California schools are giving instruction in offset printing as part of their graphic arts courses in order to meet the steadily growing demand for trained offset pressmen, platemakers and cameramen.

During the past decade, the rapid growth of offset printing has resulted in a shortage of skilled workers. There is need for printers with good basic training in the fundamentals of the process as it can be taught in the offset printing schools.

Santa Barbara College of the University of California, leading industrial arts teachers training college on the Pacific Coast, anticipated this trend ten years ago when it added offset to its curriculum. An ATF Chief 22 offset press is used in this department.

Other California schools are now following suit, including offset printing in their graphic arts courses.

During the past two years the John Burroughs High School, Burbank, installed an ATF Chief 22 offset press and platemaking equipment.

The Los Angeles Trade Technical Junior College uses an ATF Chief 22 for training its students.

A complete offset plant was recently installed in the Harbor Junior College, Los Angeles. This installation includes an ATF Chief 22, a 14x17 ATF Process Camera, and platemaking equipment.

Chaffee College, Ontario, California, put in offset to facilitate training in the journalism department. It uses an ATF Chief 22 for printing its regular college newspaper.

Further information on the successful inclusion of offset printing in other schools is available from ATF's Department of Education.

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The Wildcat, tabloid school newspaper published by the Monrovia-Arcadia-Duarte High School, Monrovia, California, is printed on an ATF Little Giant 6 automatic cylinder press.

When open, the sheet size is 18"x24". However, the sheet was folded and run through the 12x18 press four times.

The ATF Little Giant 6 is an ideal press for student instruction. It is easy and safe to operate. It can also be used to print booklets, posters, bulletins, cards, almost every type of work that might be done in the school shop.

How the Graphic Arts Function in the Springfield Plan

Four junior high schools in Springfield, Mass., have graphic arts shops.

The primary aim of these courses is to tie in the academic work with some degree of manual craftsmanship and to bring home to the students the importance of printing in the everyday life of the community. They have played an important part in developing and publicizing the Springfield Plan for better community relations.

A 64-page book, the result of the cooperative efforts of Social Studies, English, Art and Printing classes in the elementary and junior high schools, might be called the "key" to the Springfield Plan. By printing, illustrating, and binding the writings of the students into volumes, the students could take the work of their classmates into their homes to be read by their parents.

It is a graphic example of how the Springfield Plan works to develop racial and religious understanding and tolerance, as well as to develop the craftsmanship of students.

What Industrial Education Could Do for the "60 Percent"

By John F. Friese

During the past half dozen years there has been a great deal of talk about the forgotten "60 percent" of high-school students for whom neither the academic nor the vocational curriculum is suited. Yet relatively little has been done about the problem. Here is the result of some exploratory work with suggestions for course content of general occupational education aimed at this group. John F. Friese is Professor of Industrial Arts at The Pennsylvania State College, State College, Pennsylvania.

MANY secondary schools in the United States still provide a woefully inadequate program for the majority of their students. The indictment of the famous Prosser Resolution of 1945 still holds good today. It says in part ". . . 60 percent of our youth of secondary-school age will (not) receive the life-adjustment training they need and to which they are entitled as American citizens—unless and until the administrators of public education with the assistance of the vocational-education leaders formulate a . . . program for this group."

These boys and girls constitute the backbone, in numbers, of senior-high schools. Many pregraduation dropouts come from this group; in the postwar years more than one million youths withdrew from school each year before graduation.[1] Most of the "60 Percenters" are in the labor market each year searching for their first permanent full-time jobs. The other 40 percent of our high-school students are well served equally by the traditional college-preparatory curriculum and by vocational education in trades, agriculture, distribution and commerce, and homemaking.

What Occupational Training?

Some preparatory occupational experience for many of these neglected youths must be based on the most common things that they as workers in industrial, service, and related occupations will likely be called on to do. Obviously they do not know in what payroll jobs they will first work, and if they did the number and character of jobs would be almost endless. Frequently these jobs can be learned in a relatively short time, and sometimes cannot be learned elsewhere than through actual employment. What can be done in school to help them? They can read and listen to words about work, and through what is outlined below[2] they can supplement such vicarious, second-hand experience with real experiences.

These educational experiences provide some common elements of training in and for payroll jobs frequently entered by the young men and women of the "60-Percent" group—those in the so-called "general curriculum" of senior-high schools. Manipulative and mental skills, significant information concerning transition to occupational life, and training in the development of helpful habits and attitudes associated with wage-earning are included.

The program here outlined is elective and therefore to be functional must definitely serve the needs of those enrolled in any given class. These occupational services are not restricted to industrial vocations, but cut across segments of office, clerical, industrial, agricultural, food, and service vocations. This is a hybrid creation and cuts across occupational and curriculum areas.

Neither IA Nor VE

Neither the writer nor the men who worked with him thought of the program outlined herein as being industrial arts. It is not. Neither is it regular vocational education. However, youth of the 60-Percent group also need good courses in industrial arts *keyed to the interests and maturity* of senior-high-school students just as the students in the two 20-percent groups need such instruction! Such senior-high-school industrial arts gives special emphasis to discriminating consumption of the products and services of industry, to creative and problem-solving handicrafts for free-time relaxation, to the reading and interpretation of common graphic illustrations, and to studies of social-economic-regulatory factors of industrial life as they affect workers, management, and public.

Some boys and girls in the 60-Percent group could be served through extension and liberalization of certain forms of preparation for *specific* or closely related vocations such as the following: the subsidized "diversified occupations" form of part-time instruction through supervised work experience, the somewhat similar distributive-education program, the federally aided "general industrial" preparatory programs in cities under 25,000 where two or more closely related skilled trades may be taught to a learner, the vocationally slanted advanced courses in industrial-arts unit shops and related-trades shops (not industrial arts) where students' occupational needs cannot otherwise be met for any of a number of legitimate reasons, and the supervised work-experience education outside the regulations of special state and federally subsidized programs.[3]

Nontraditional Occupational Training

The occupational training program here discussed, which can under certain conditions be carried out through the *agency* of industrial arts, is certainly not a quick and immediate answer to the problem of how to serve the 60-Percent group adequately. It does not constitute a complete "life-adjustment program"

[1] Harold J. Dillon, *Early School Leavers*, National Child Labor Committee, 419 Fourth Ave., New York 16, N. Y. 1949. Pp. 9-10.

[2] This article is largely based on research of three graduate seminars of experienced industrial-arts teachers, supervisors, and teacher trainers conducted at The Pennsylvania State College in the summer sessions of 1948 and 1949, and the spring semester of 1949. Seventy men from 11 states participated. The curriculum materials devised by these students, working as individuals, small groups, and entire classes, was published in 1949 in mimeographed form under the title, "General Occupational Education for Some of the Sixty Percent." It is now out of print.

[3] *Secondary School Manual for Pennsylvania*, Bulletin 241 Revised, Department of Public Instruction, Harrisburg, 1950, p. 41.

School-and-Work Programs, Bulletin 1947, No. 9, Office of Education, Washington, D.C.

School-Work Program, School District of Philadelphia, Pa., 1946.

Education Through Work Experience, State Education Department, Albany, 1948.

Harold J. Dillon, *Work Experience in Secondary Education*. National Child Labor Committee, 419 Fourth Ave., New York 16, N.Y., 1946.

for them. *It can be one means of providing certain occupational training aspects of a more complete program for these boys and girls.* Some suggested categories of general occupational education for the 60 Percenters are listed later.

This work *cannot be carried on in the traditional manner* of industrial arts. Freedom from limitations of content, methods, teaching aids, materials, and equipment are essential. Elements of other of the practical arts are used. Some content, procedures including analysis, and methods from preparatory vocational education are needed. Teacher-directed, on-the-job education especially through community projects is included. This educational service is rendered through the agency of industrial arts only because it happens to be able to contribute most through its shops, teachers, and administrative location and direction. When modified and amplified somewhat it can be made functional. Additional types of equipment, frequently not the common tools and machines of industrial arts, can be added. Certain types of war-surplus items, not otherwise usable, are an excellent source of study of assembly-line production. Reference to lists and examples of "lessons," following, reveals a variety of nontraditional equipment which would be valuable. Much of it would not be expensive. Some could be secured on a gift or loan basis.

Who Should Teach.—The industrial-arts teacher of general occupational training must have certain qualifications. He must have the usual training in a variety of trade and craft skills and related knowledge, be a good manager of plant and personnel, and be a good teacher of skills, knowledges, and appreciations. In addition to these, he must have wage-earning occupational experiences, preferably in several trades and businesses. He must have or be able to make occupational contacts for various purposes. He must understand, interpret, and work with labor and management. He should be able to use some training techniques developed and found successful in the programs of preparatory vocational education, such as advisory committees. He must have imagination, vision, versatility and be able to analyze and surmount a variety of obstacles both within and outside of schools.

Time and Timing.—It was the studied opinion of many in the seminars that one or possibly two semesters of instruction of 300 to 600 minutes per week is probably all that could be justified for the type of inschool program here outlined. Such a program can be carried on in some states under existing regulations for high-school credits, hours, and graduation.

The program to be most effective should be available when individual students feel the need for it. Usually this would be when dropping out of school is being considered, or shortly before graduation.

Examples of Lesson Materials.—The examples of lesson materials which follow are taken from outlines prepared by seminar students.

Suggested Occupational-Education Units

UNIT

I. Care of Equipment
   - A. The electrical system
   - B. Lubrication of machines
   - C. Mechanical features

II. Developing Personal Habits and Attitudes in Service Occupations
   - A. Gas-station attendant (sample)

III. Driving, Care, and Operation of Commercial Motor Vehicles
   - A. Washing and polishing a car
   - B. Care and cleaning of upholstery
   - C. Trucks and the trucking business
   - D. How drivers are trained
   - E. Insurance and legal aspects
   - F. Accident-prevention plans for drivers
   - G. How fleet and truck drivers are selected
   - H. Fleet company incentives for drivers

IV. Good Occupational Housekeeping
   - A. Reasons for good industrial housekeeping (information)
   - B. Care and disposal of waste materials
   - C. Care of shop machinery
   - D. Care and storage of materials and supplies (demonstration)
   - E. Care and storage of tools
   - F. Custodial and janitorial duties

V. Getting and Holding a Job
   - A. Guidance factors to consider in choosing an occupational career
   - B. Locating job openings through placement bureaus
   - C. The letter of application
   - D. The application blank
   - E. The personal interview
   - F. Entrance requirements in metal-working occupations
   - G. Factors for individuals to consider in order to hold a job successfully

VI. Understanding Modern Industry
   - A. Workman's compensation
   - B. The Workman's benefits through the Social Security Act
   - C. Plant organization
   - D. Employer-employee relations
   - E. Time study
   - F. Labor organizations and their functions
   - G. Problems of management

Examples of Lessons from Preceding Units

UNIT I. CARE OF EQUIPMENT

Lesson B. *Lubrication of Machines*

Content or Educational Experiences	*Methods of Teaching & Learning (including instruction sheets & visual aids)*	*Needed Shop & Other Equipment (including projectors, models, etc.)*	*Other Applicable Common Problems, Occupations, etc.*
1. To recognize types of: *a.* Bearings *b.* Bushings *c.* Gears *d.* Sliding fits 2. Causes of Wear of: *a.* Bearings *b.* Bushings *c.* Gears *d.* Sliding fits 3. Selection of approved lubrication for: *a.* Bearings *b.* Bushings *c.* Gears *d.* Sliding fits 4. Application of approved lub.: *a.* Daily *b.* Weekly *c.* Monthly *d.* Yearly 5. Job evaluation: *a.* Lub. cost vs. wear *b.* Progressive maintenance	1. Film on types of wear due to improper or lack of lub. 2. Instructor demonstrates proper lub. through the use of wall charts 3. With available equipment, instructor shows pupils various lub. techniques *Pupil Activity* 1. Actual pupil participation in lubricating machinery in the shop 2. Teacher-pupil planning for progressive maintenance for own machinery	1. Motion picture projector, and film (from Standard Oil of N. J.) 2. Wall chart of lubricants (from Esso of Penna.) *References* 1. "Modern Lub. Oil," C. S. Eklund. *American City* 61 (March, 1946), 115-16. 2. "Simplified Lub. for Machines," R. K. Hollester. *American City* 61 (June, 1946), 102. 3. "Friction Fighters: New Oils and Greases," H. E. Rose. *Scientific Digest* 17 (May, 1945), 59-62.	1. These techniques apply to home workshops & to industry

H. Plant requisitions
I. Wage-hour law
J. Inventory procedure
K. Job analysis

VII. Speeded Repetitive Work
A. Platform trestles
B. Portable bleachers
C. Drawing boards
D. Printing of school periodicals
E. Electrical scoreboard
F. Metalcrafts (art) fruit bowl
G. Planning for production
H. Types of production lines
I. History of production work
J. Routing and scheduling
K. Dispatching
L. Material handling
M. Time-and-motion study
N. Disassembling the production line
O. Training workers in industry

VIII. Use of Time-Recording Devices, Records, and Wages
A. Time cards and time clocks
B. Time charts
C. Explanation of payroll withholdings
D. Computing daily earnings and weekly pay checks
E. Writing and endorsing checks

IX. Packing, Shipping, and Their Regulations
A. Ways and means of transporting goods
B. Parcel post (information)
C. Preparing packages for mailing
D. Express (information)
E. Preparing packages for express
F. Freight (information)
G. Preparing freight shipments
H. Air freight (information)
I. Computing costs from weighing devices

X. Occupational Safety
A. Psychological
B. Environment in industry
C. Fire hazards
D. Electrical hazards
E. Industrial dress
F. Hand tools
G. Power machines
H. Moving and lifting objects
I. First aid

XI. Landscape Maintenance
A. Plane-table map of school environs
B. Baseball and softball diamonds
C. Staking out small buildings
D. Laying and repairing concrete
E. Garden landscaping
F. Repairing brick walls and walks

XII. Incidental Typing
A. Operator maintenance
B. Typing letters
C. Typing-in printed forms

Unit II. Developing Personal Habits and Attitudes in Service Occupations

Lesson A. *Gas-Station Attendant*

Content or Educational Experiences	*Methods of Teaching & Learning (including instruction sheets & visual aids)*	*Needed Shop & Other Equipment (including projectors, models, etc.)*	*Other Applicable Common Problems, Occupations, etc.*
1. Courtesy 2. Personal grooming 3. Poise & posture 4. Tact: *a.* Meeting people *b.* Giving directions *c.* Taking instructions *d.* Introductions 5. Delivery & errand procedures: *a.* Carrying bundles, luggage, etc. 6. Maintaining records: *a.* Bills *b.* Sales *c.* Hours *d.* Adjustments 7. Regulations: *a.* Safety *b.* Administration *c.* Fire *d.* Protection (1) Firearms *e.* Operator's license 8. Health habits: *a.* Recreation *b.* Eating 9. Operation of: *a.* Bicycles *b.* Elevators *c.* Passenger cars *d.* Delivery trucks	1. Lecture 2. Assigned readings 3. Class discussion 4. Observation of actual situations & practices 5. Visit by: *a.* Management representatives *b.* Representative of personnel services 6. Conferences with experienced adults 7. Information sheets 8. Films on: *a.* Health *b.* Safety *c.* Grooming *d.* Courtesy (see film library) *Pupil Activity* 1. Teacher demonstration & student participation: *a.* Courtesy *b.* Meeting people *c.* Taking & following instructions *d.* Making introductions	1. Classroom facilities 2. Film-projector screen 3. Film projector 4. Strip-film machine *References & Clippings* 1. Stephenson, M. & Millet, R. *As Others Like You.* McKnight & McKnight, Bloomington, Illinois. 2. Post, Emily. *Etiquette.* New York: Funk & Wagnalls. 3. Ryan, M. G. *Cues for You.* D. Appleton-Century Co. 4. U. S. Dept. of Labor & U. S. Employment Service. *Job Descriptions for Hotels & Restaurants.*	1. Transportation: *a.* Gas-station attendant *b.* Stewardess *c.* Chauffeur *d.* Conductor 2. Sales: *a.* Clerk *b.* Newsboy *c.* Solicitor *d.* Waiter 3. Personal: *a.* Valet *b.* Butler *c.* Personal attendant *d.* Bootblack 4. Protection services: *a.* Guard *b.* Night watchman *c.* Floorman 5. Building services: *a.* Baggageman *b.* Chambermaid *c.* Doorman *d.* Elevator operator

Unit IV. Good Occupational Housekeeping

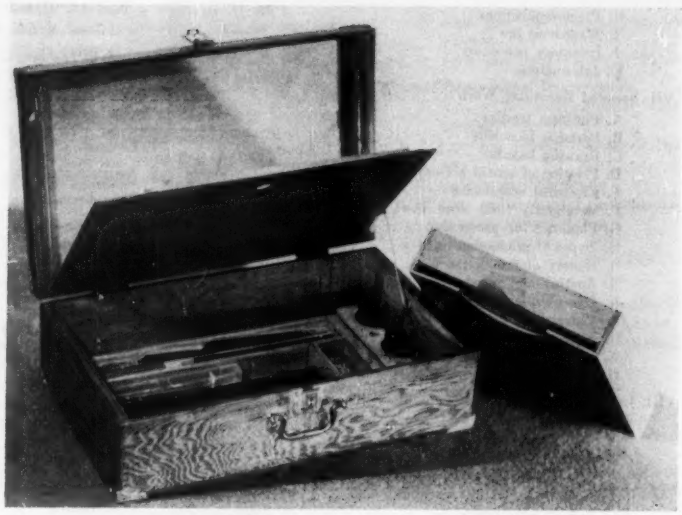
Lesson D. *Care and Storage of Materials and Supplies (Demonstration)*

Content or Educational Experiences	*Methods of Teaching & Learning (including instruction sheets & visual aids)*	*Needed Shop & Other Equipment (including projectors, models, etc.)*	*Other Applicable Common Problems, Occupations, etc.*
1. Proper methods of storing materials and supplies 2. Illustrate how inventories are taken and kept 3. Need for checking in supplies received and methods used	1. Demonstration by teacher; participation by the students in performing the jobs demonstrated 2. How materials & supplies are handled & stored in large quantities: *a.* Field trips to stores, industries, warehouses *Student Activity* 1. To be performed by student & checked by instructor—when supplies come into shop they are checked in and stored (repeated)		1. Types of jobs suggested: *a.* Sales clerks *b.* Inventory clerks *c.* Stock supply clerks *d.* Window trimmer

Compact Drafting Kit

By H. LeRoy Marlow

A problem in building a kit like this is to make it large enough to be useful—yet not too large to be bulky. There must be a happy medium; perhaps here is the answer to your needs. H. LeRoy Marlow teaches at Patterson Park High School, Baltimore, Maryland.



Compactness and simplicity of design are featured in this kit. Note also the protection sheet for holding articles in place in the lid, ink-bottle holders, and triangle storage.

HERE'S a project that will appeal to the drafting student in particular, and to others as well. While not difficult to build, this plywood drafting box introduces the student to the making of simple joints and to the need for accurate cutting and fitting that will be required of him when he undertakes other more advanced types of projects.

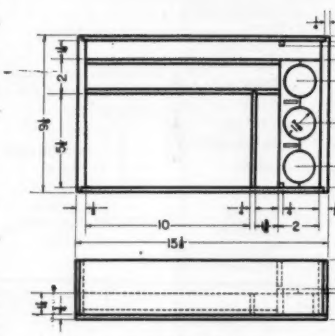
Note the over-all dimensions—15⅛" x 9⅛" x 4¼"—allow easy maneuverability and yet provide ample room to carry necessary supplies and equipment. The design lends itself to working directly from the box, with all equipment and supplies readily accessible. This feature minimizes fumbling for pen points, erasing shield, triangle, or some other article. It is possible to carry three ink bottles. These are securely held in place by a simple yet efficient lock. This holding device receives its tension from rubber bands as shown in the diagram.

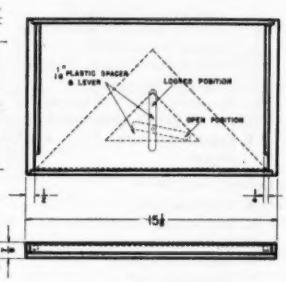
Triangles are easily accessible in the false-bottomed tray when the kit is in use, yet they cannot fall from their place when the tray is in carrying position. The tray will easily accommodate 30°.

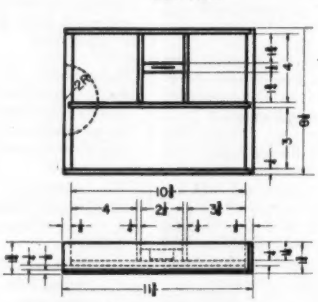
(*Continued on next page*)

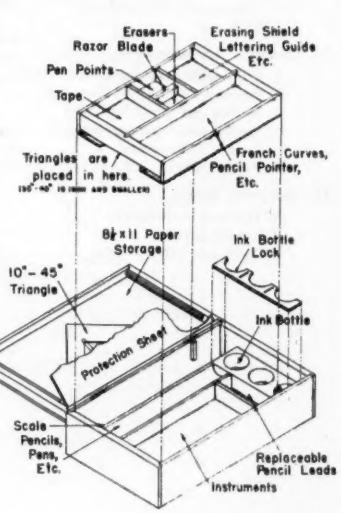
BILL OF MATERIALS

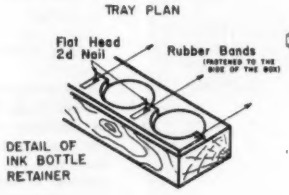
No.	*Part*	*Dimensions*
2	Top & Bottom	15⅛" x 9⅛" x ¼"
2	Ends	9⅛" x 3¾" x ½"
2	Sides	14⅜" x 3¾" x ¼"
1	Pencil Block	11½" x 2" x 1¼"
1	Ink Bottle Block	7½" x 2½" 1"
	Partitions	x ⅛"
2	Tray Sides	11⅜" x 1¾" x ¼"
1	Tray End	8½" x 1⅜" x ½"
1	Tray End	8½" x 1¾" x ½"
1	Bottom	11⅜" x 8½" x ¼"
1	Sub-Bottom	
	Hardware:	11⅛" x 8¼" x ¼"
2	1½" Hinges	











60° triangles up to and including 10″ and smaller 45° triangles. The top of the tray and the box itself provide ample storage space for instruments, pencils, pens, lettering guides, and other needed articles. A single-edge razor blade can be safely carried in the slot in tray top. The lid of the box holds the 10″ 45° triangle and sketching paper; it could also be used to carry a thin textbook. The protection sheet, when the box is closed, prevents any tray article from becoming misplaced.

As for construction, all joints are quite simple to make and are shown in the drawing. It is best to make the lid and bottom in one piece and then cut them apart. The wood used throughout was plywood although any other suitable wood could be used. The finish is optional; however, an oil stain and rubbing varnish were applied to this box. If you prefer, a single loose-pin hinge could be fastened to the front of the box, acting as a hasp and keeper. To open the box it would be merely necessary to remove the hinge pin. A handle of the type desired should be fastened to the kit to facilitate carrying. ★

Flash!

Raymond W. Gregory has been replaced as assistant commissioner for vocational education in the USOE by Ward P. Beard, veteran vocational educator. This shake-up is the direct result of the Hardy criticism and fears that additional budget cuts, such as the one which crippled business education, might be forthcoming. For full details see "From Washington" on page 32.

Answers to Quiz →

1. **William and Mary.**—Carved, S-shaped leg; precursor of cabriole. 1675.
2. **Ames.**—Contemporary American; metal and formed plywood. 1945.
3. **Victorian.**—American chair of walnut; biscuit tufted. 1860.
4. **Jacobean.** — English oak chair, often called wainscot chair; stretchers held feet off cold floors. 1625.
5. **Windsor.**—American bow-back; usually ash, hickory, or maple. 1780.
6. **Duncan Phyfe.** — Lyre-back American chair; curved back and outward flare of legs. 1810.
7. **Queen Anne.**—English curved splat back and cabriole legs. 1720.
8. **French Provincial.**—Louis XV style. 1775.
9. **Chippendale.** — Decorated open splat; carved cabriole legs; similar to Queen Anne. 1770.
10. **Adams.** — English wheel-back; reeded legs and rails of mahogany. 1780.
11. **Hepplewhite.** — Shield-back; tapered legs; spade feet and curved seat. 1795.
12. **Sheraton.**—Classical motifs; typical of French, English design of period. 1795.

Quiz on Period Furniture

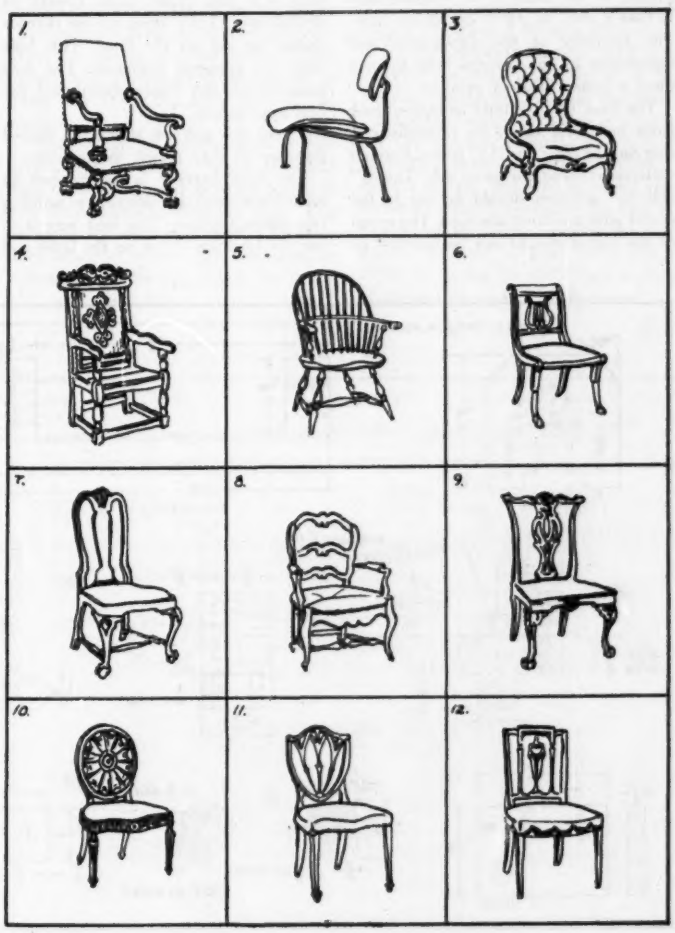
By John A. Carey

Here is a quiz that can be used in an opaque projector to develop knowledge of good design. The author teaches at Santa Cruz, Calif., High School.

THE following quiz has been designed and used successfully to give students of woodworking a better idea of the development of various styles and periods of furniture. The more tradition, history, and evolution of furniture design that is known by the students and, of course, the instructor, the better the opportunity to create appreciation which is so vital to fine craftsmanship.

This is a matching test with the following furniture styles to be matched with the illustrations below:

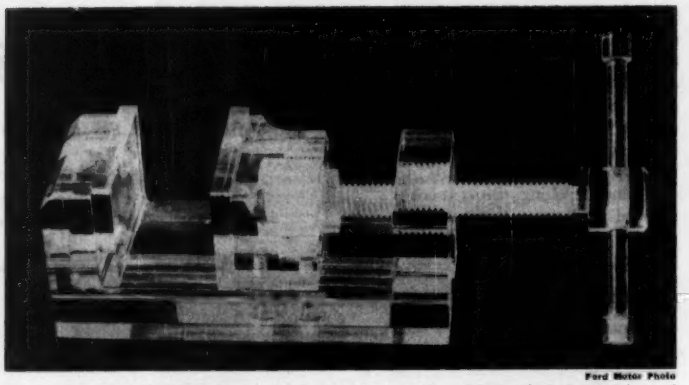
Jacobean	William and Mary
Queen Anne	Chippendale
French Provincial	Windsor
Adams	Sheraton
Hepplewhite	Duncan Phyfe
Victorian	Ames ★



Plastic Drill-Press Vise

By Edward Allard

Edward Allard is a student at Lane Technical High School, Chicago, Ill., where he made this project under the direction of his instructor, H. M. Buerckholtz. It won a prize in the Ford Industrial Arts Awards program.



Ford Motor Photo

This is an excellent illustrative device for showing the operation of basic physical principles and the relationships of parts which are normally hidden from the students' view.

THIS drill-press vise will bring out all of the skill of a student. Patience is a very important factor, because, in cutting the plastic on the lathe, it is possible only to take a .001" to .003" cut at one time. The accuracy of the dimensions and squareness of the corners help to produce a better finished product.

The base (#2) should be started first from one solid block by carefully cutting out the 3⅝" by 1⅛" piece. Enough material remains for piece #4. The ¾" and ½" grooves should be cut in the center with a milling machine. The speed of the cutter should not be too fast or too slow because the friction may melt the plastic.

The bottom of piece #4 should be started first, making sure it fits perfectly with #2. The center hole should be drilled only 13/16" deep and the threads should be cut on the lathe. This hole must be centered perfectly. The bolt holes should be evenly distributed for best appearance.

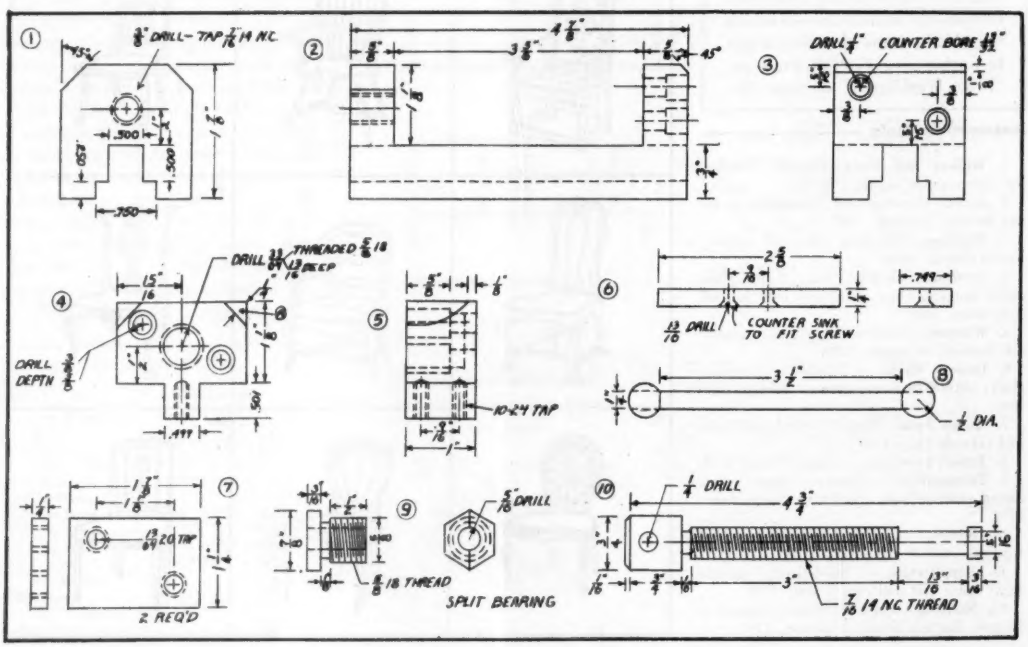
Pieces #4 and #6 should be drilled together so they match throughout.

The split bearing is the hardest to make because of the difficulty in holding two pieces together. The best way is to use the four-jaw chuck on the lathe and center the two pieces so the 5/16" hole can be drilled in the center of the ⅞" diameter. If the piece is about 1½" long, it can be held with a sufficient amount of pressure.

In cutting the threads on pieces #9 and #10 the automatic feed should be fast, not cutting more than .001" to .003".

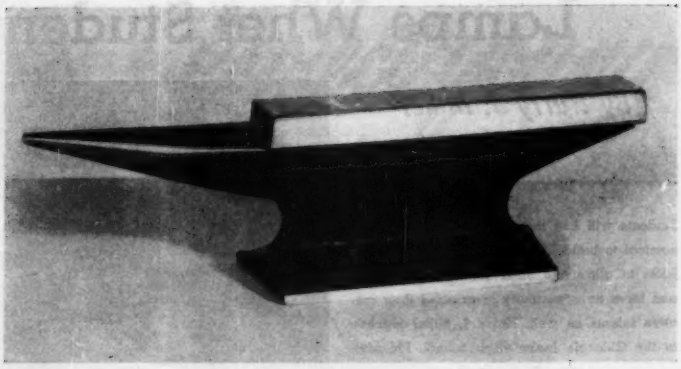
On #10 it is advisable to cut only .002" at one time because that length of plastic will bend easily.

The screws and bolts can be made by copying the dimensions from a metal bolt that is the same size as the plastic ones needed. ★



Railroad Rail Anvil

By Charles F. Stein



Light-weight rail was used in making this anvil, but standard-weight rail can be used. Students will learn skills at a number of machines and at the bench in making this project.

Attractiveness, utility, and flexibility of construction make this anvil suited to the needs of many students and instructors and adaptable to the facilities of different shops. Charles F. Stein teaches at the Alliance, Ohio, High School.

FLEXIBILITY of construction methods to fit several different teaching situations is the outstanding feature of this railroad-rail anvil. In making this project, students can be taught a number of machine and bench operations in vocational machine-shop classes. On the other hand, it is possible to make a satisfactory anvil with only a lathe as a power tool. It has been particularly useful in providing work for the planer, a machine which is sometimes difficult to keep supplied with the proper type of work.

Despite the methods of construction employed, the finished product will have utilitarian value both from the school-shop and the home workshop angle and also possess a nice appearance that appeals to both the youth and the adult.

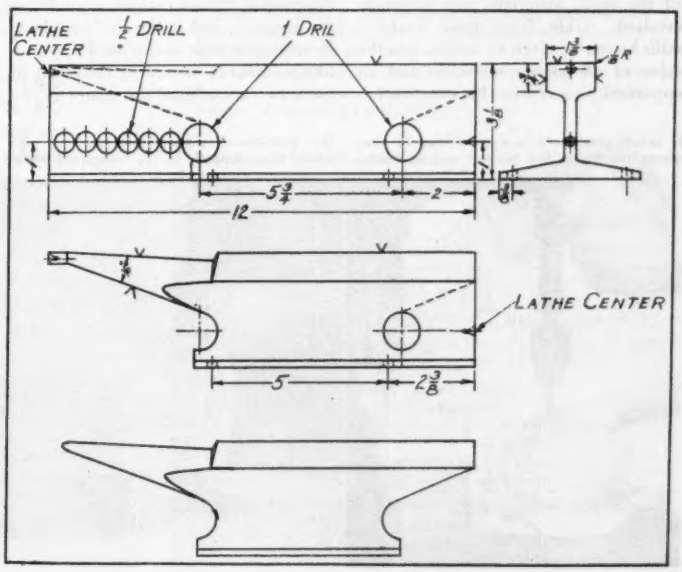
The instructor can devise his own inspection schedule of the work to be used as it proceeds. It can be adapted to the machines used, his teaching objectives, and the previous experience of his students. The teacher can further emphasize the techniques to be learned in each separate step from layout to the machine operations. Properly administered, these check-ups can be used to good advantage. The following procedures can also be modified to suit individual needs.

First, saw the rail to length. If the rail has been in actual service, it would be wise to anneal it before proceeding further. Set up the rail in the planer. Two to four rail sections are generally clamped to the planer platen at a time and are lined up in tandem. A cleanup cut is taken from the top, then from the sides by vertical facing. With a radius tool, radius one of the top edges. The burrs are filed off, the work removed from the planer, and the holes drilled. After this is completed, the waste is sawn out from the horn end of the anvil.

Next set up in a lathe between centers. The horn end is turned after setting the lathe for the desired taper. If the shop doesn't possess a lathe dog large enough to fit the anvil, a satisfactory means of driving the work may be substituted by putting a bolt through a slot in the faceplate.

After the horn is polished and the waste is removed from the tail end of the anvil, it is set up in the shaper with the bottom side up and with the ends of the base parallel to the stroke of the shaper. The ends of the base are vertically faced. Following this, the anvil is reset with the horn end lowered so that the angle on the tail end may be shaped.

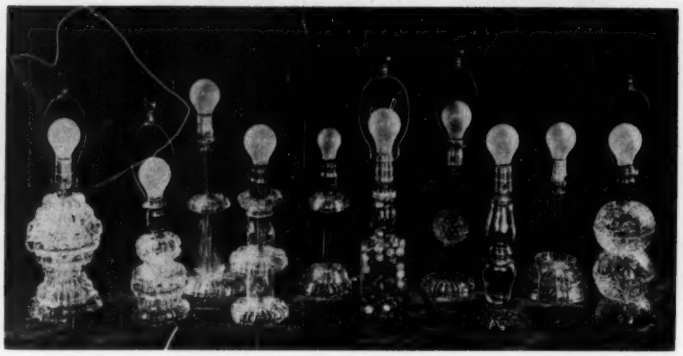
After the shaper operation is completed, the machined surfaces are filed, drawfiling wherever possible to obtain a smooth surface, followed by emery-cloth polishing. Surface grinding the face and stoning off the burrs complete the operations. However, a final touch can be added by giving the unfinished surfaces of the anvil a coat of black enamel. ★



Lamps Whet Student Interest

By Harry J. Miller

Students will find these lamps easy and economical to build. They will learn how to drill holes in glass and other more common skills and have an opportunity to exercise their creative talents as well. Harry J. Miller teaches in the Gillespie Junior High School, Philadelphia, Pennsylvania.



Pickle jars, ashtrays, and saucers are a few of the items used in making these unusual lamps.

A LOW-COST project that is in itself useful, teaches pupils new skills, and draws student interest is a big order to fill. Here is one that goes a long way toward meeting these objectives. Dime-store ashtrays, other novelty glassware, pottery and ceramics, or discarded bottles are utilized in making these colorful lamps. For this reason, the project is especially suited as a beginning electrical project.

In making a lamp, a student will learn how to drill glass, to cut and thread pipe, do electrical wiring and testing for a ground, and to use power equipment if desired. The shop teacher also can insist that the pupil learn the names of all the tools, materials, and processes involved. Aside from these concrete skills he can be given an insight into the value of conserving materials and an opportunity to express his creative talents in a great variety of interesting ways.

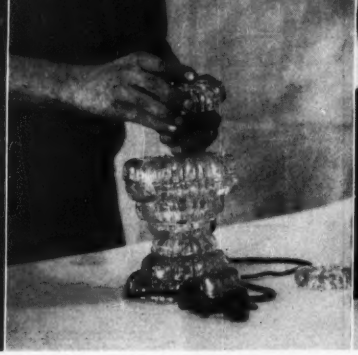
Having selected the lamp he wants to make from the types suggested, or having been urged to create his own design, the student first draws a plan, then makes up a bill of material and a schedule of operations and totals the cost. He then does his own shopping, or better yet, searches around his home for glassware and possibly obtains electrical parts from outmoded lamps or from suppliers.

After the materials are brought together, the first step is to drill the holes in the glass. The tool used for hand drilling is the tang end of an old triangular file ground to a point on all three sides. Silicon carbide, grain 80, is the abrasive, and it can be "stretched" by mixing it with coarse sand and iron filings. Make a mound or doughnut of putty or clay around the center of the desired hole. Add a little of the abrasive, wet it to a muddy consistency with pure turpentine, and drill with light pressure. If a drill press is used, the drill is made by cutting a few 1/16″ deep hacksaw cuts in the end of a 2″ piece of ⅛″ diameter iron pipe.

A piece of ⅛″ brass or iron pipe for supporting the socket and other parts is cut to the desired length, threaded and the inside burrs removed with a file or a reamer. A rubber washer, made from a piece of scrap rubber, is slipped onto the pipe, then a flat washer, and a nut is turned on, flush with the end of the pipe. Cord and plug are next installed. Ashtrays or other glassware are arranged on the pipe to suit the fancy of the student, remembering to provide a nontilting base. To complete the project, a harp of proper length to support the shade is selected. The cap of the socket will hold it firmly in place. ★

In actual practice, it is a good idea to wear gloves and to use firm support to hold bottle.

The glassware is slipped onto the iron pipe which gives support to the completed lamp.



A test for operation and a possible ground in pipe or socket is made after final assembly.

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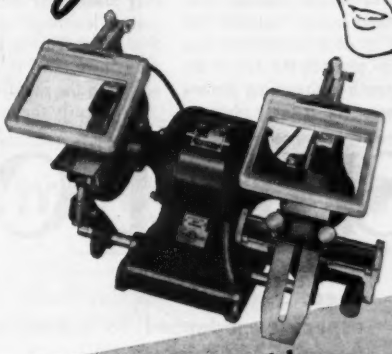

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Diamond Dust

Abrasive comments from that doughty Scot, Tom Diamond, former head, Department of Vocational Education, University of Michigan, Ann Arbor.

A Bit of Heresy

THE snow has gone—we hope—the crocuses are blooming, the trees are budding, and the birds are singing their love songs to their mates. Sulphur and molasses, or its modern counterpart, has begun to take its place in the diet of the children, and youth is dreaming dreams of things to come. All of these phenomena indicate quite clearly that Spring is upon us, and when Spring is present Summer is not far away.

When, in the course of natural events, Summer does descend upon us, the thoughts of everyone turn to the problem of how to while the hours away to gain the maximum of satisfaction.

In common with their fellows, industrial-arts teachers are apt to be toying with a problem of their own. Should they make their annual pilgrimage to a seat of learning? or should they skip it this year? This is a perennial problem with them, and is one which is rarely solved to the satisfaction of everyone.

Frequently the answer is based on the question of finance, but just as frequently the matter is settled by the constant pressure brought to bear on the teacher to improve himself by attending summer session in a college. The question of whether improvement results from such an experience often is debatable. As a matter of fact, cases might be cited which would indicate that there are other experiences which may cause the teacher to return to his teaching in the fall so inspired that his pupils derive greater benefit from their work.

We recognize that this philosophy is contrary to the accepted belief of many educators, particularly teacher trainers. We are of the opinion, however, that this tradition of attending summer school is a relic of the dark ages, when anyone could obtain a certificate to teach, regardless of his previous training. Now that the accepted standards for teachers, in most cases, prescribe a university degree, the need for further training is relatively less acute.

We pointed out in a previous issue that the teacher is a busy person, and we are inclined to wonder why it is that he is not content with having been engaged in a strenuous occupation for ten months of the year. Think of it—ten months of activity, trying to keep pace with 30 or 40 vigorous youngsters, and then voluntarily devoting the remaining two months to the doubtful allurements of a college campus! One has to be a hardy soul indeed to contemplate such devotion to duty. Viewed from the comfort of an editorial armchair, such a procedure appears to have all the elements of moronity.

It is true that the teacher may be pursuing the ever-elusive degree, which is felt by some to be essential to good teaching. But is it not true that relaxation from strenuous activity is beneficial? The teacher owes something to himself and to his family. If the family is happy he is happy and, being happy, he does a better job of teaching.

If this is true, and we believe it is, would it not be wiser for the teacher to spend his recess with his family in the country where there is a lake, some tackle, and a few fish who are eager to be caught? But, someone says, "I don't like fishing." This is a calamity, but no disgrace. This individual may get pleasure out of roaming through the woods studying the trees, the flowers, or the indigenous wild life. He may even get pleasure out of lying in a hammock under the shade of a friendly oak tree.

Again, the paved highway, which winds its way over the horizon to far-away places, presents a challenge to

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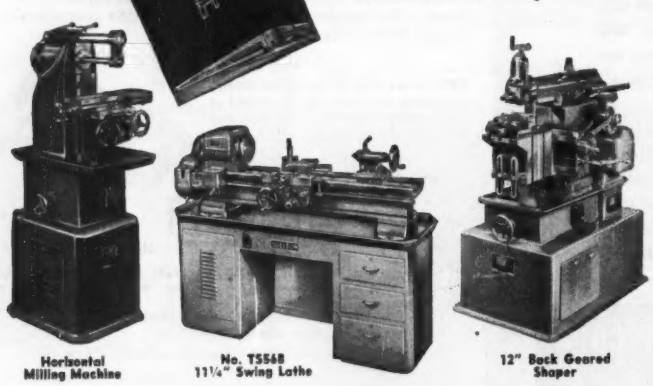

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those who have the blood of the hobo in their veins. Any one of these is a delightful way of spending one's leisure time, and is an activity which can be enjoyed by the whole family.

Other schemes might be suggested for using the vacation period profitably, but those indicated above are sufficient to emphasize the fact that the teacher can enjoy the company of his family, and at the same time gain experiences which will prove valuable to him when, in September, he assumes once more the role of teacher.

It is not our purpose to belittle the practice of attending summer school. Rather do we wish to stress the educational value of other experiences. These other experiences provide the relaxation which every teacher needs if he is to have a healthy mental attitude toward his job. If conditions make attendance at summer school imperative, we would suggest that one summer out of every three would be a reasonable distribution of time. The remaining two summers should be devoted to recreational activity of a kind that permits the participation of the whole family.

To many this may sound like heresy, but it is our feeling that any plan that contributes to the happiness of a teacher and his family, and at the same time provides worthwhile experience, is bound to make for better teaching. What does friend wife have to say about this problem? ★

IN THE Morning Mail . .

[Brief comments about SCHOOL SHOP and the field it serves are invited. Address the Editor, SCHOOL SHOP, Ann Arbor, Michigan.

Dear Sir,

The writer is not a "veep" of any big organization nor is he a "wheel" in any school district. He is just one of those smaller "cogs" which help the "wheels." As a teacher of industrial arts and one who has had a wide experience in and out of the classroom and/or shop, he wishes to come forth with his opinion about the editorial, "Can He Do It?" on page 2 of your March issue.

In the first place let him confine his statements to junior and senior high schools and principally to industrial arts. His contention is that industrial arts should be exploratory and in no way whatsoever try to turn out "master craftsmen."

Among some 20 or more high-school subjects he has taught are biology, physics, chemistry, U. S. government, civics, economics, and sociology, just to name a few. In none of these does he recall that he was expected to turn out "master craftsmen." With one or two years of biology he was not expected to produce biologists; with one or two years of history and civics he was not expected to turn out historians or ambassadors or ministers plenipotentiary. Industrial arts should be offered as a field of exploration to the possible lawyer, doctor, merchant, chief, and not just to the *possible* craftsmen.

Then, in our field of industrial arts, why not be satisfied to let the student explore for a year or two in the various classes offered in our department, encouraging each student to do the best he can in his individual way and leave the training "*of* the master craftsmen," "*for* the master craftsmen," and "*by* the master craftsmen" to the vocational and technical schools?

Worthy C. Kanarr,
Stadium High School,
Tacoma, Washington

Dear Sir,

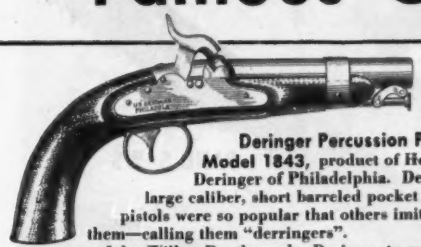
Industrial arts on the junior-high-school level is designed to give an exposure to a number of different activities. They include the teaching of the fundamental operations and the presenting of a chance for the student to do some planning and creative work if interest and ability permit.

The students in the senior-high school should be treated more and more on an individual basis. Their work should be planned according to their interests, attitudes, and abilities. Interest is a prime factor, for, without it, it would be like driving a truck without a steering wheel.

The student enters what is definitely an industrial-arts program, but, with progress, he passes into a large twilight zone which, with further progress, reappears with some of the basic elements of some phase of vocational education.

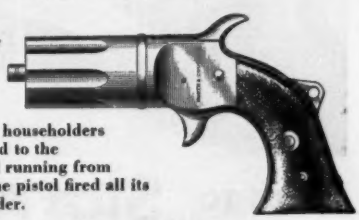
Omer Benn,
Lyons Junior-Senior
High School,
Clinton, Iowa

Famous Guns



Deringer Percussion Pistol, Model 1843, product of Henry Deringer of Philadelphia. Deringer's large caliber, short barreled pocket pistols were so popular that others imitated them—calling them "derringers". John Wilkes Booth used a Deringer to assassinate Lincoln.

Trap or Doorjamb Pistol, Caliber .31, made by North & Couch, Middletown, Conn. This lethal little device protected householders against burglars. Fixed to the doorjamb, with a cord running from muzzle rod to door, the pistol fired all its barrels into any intruder.



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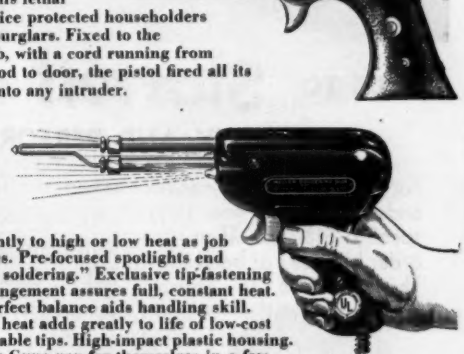

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Numbered Printing Job

When a printing job calls for numbered copies, here is a good way to prevent it from coming back with numbers missing. After the last number is printed, take the form out of the press, unlock it, and replace the numbering machine with a piece of furniture. Replace the form in the press and run off about 25 more copies. As the job is being checked, bad copies are replaced with hand-stamped extra copies. In this way it will not be necessary to keep the form tied up until the job is delivered, and also insures a perfect job each time.—*H. A. Braggins, Central High School, Pueblo, Colo.*

No Protractor Needed

To draw an angle of any given number of degrees with only a compass and a rule the following procedure can be used:

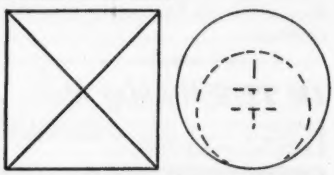
1. Draw an arc of 3⅝", using the vertex of the given angle as a center.
2. Mark off a chordal distance of 1⅞" along the arc. The arc that spans this chord is 30°.
3. 1⅞" equals 30 sixteenths.
4. If each of the 30 one-sixteenth divisions is connected with the center of the arc, the angle will be divided into parts of 1° each.
5. The chord of 1⅞" radius is accurate to 0.0007", and any angle laid off in sixteenths on the chord is accurate to 4'. — *Thomas Hingsberg, Stuyvesant High School, New York, N.Y.*

Tapering Legs in the Lathe

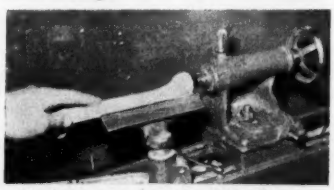
Table or stool legs can be made more artistic if the bottom ends are made in the form of a foot. On cylindrical legs this can be accomplished by using two tail stock centers.

If the leg is to be tapered, turn it to the required diameter at the upper end and at the lower end (at the tail stock center) to the desired diameter for the foot.

Release the tail stock center and move the small end to the second center, which had been prepared before the material was mounted in the lathe.



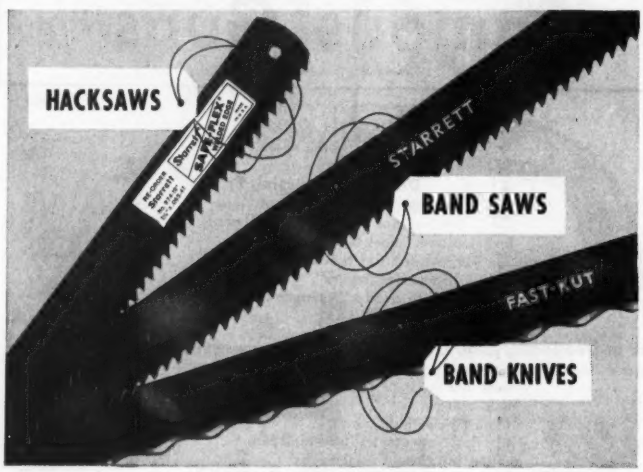
The original center would be located in the center of the material, while the second center would be placed a distance apart which would be determined by the distance the foot is to protrude from the leg.



Beginning at the top of the leg turn it until it again becomes round with the desired taper, leaving the foot the diameter to which it was turned in the first setting.—*Melvin Ham, Choteau, Montana.*

Electrical Test Board

An inexpensive hook-up for testing



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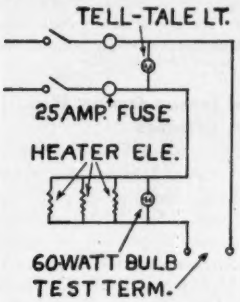
low-powered appliances without blowing fuses can be easily made as shown in the diagram. Use No. 10 or 12 wire. The tell-tale light is a blue or red 10-



watt bulb. Three 600-watt heater elements are mounted in lamp sockets as shown. Leads with insulated battery clips are fastened to the test terminals. Asbestos sheeting should be placed under the heater elements for safety. The main switch also permits the safe connection of the appliances to be tested. This test board can be used to check any house wiring jobs made in the shop, motors, and other appliances.—*John M. Lynch, Middletown, New York, High School.*

AIAA at Chicago

THE 14th annual convention of the American Industrial Arts Association was held in Chicago, Illinois, at the Congress Hotel from April 29 to May 3 with about 500 members registered and a number of visitors in attendance.

Gordon O. Wilber, head of the department of industrial arts at the Oswego, N.Y., State Teachers College, was reelected president. Fred J. Schmidt, Jr., head, department of industrial arts, Ball State Teachers College, Muncie, Ind., was named first vice-president while Kenneth W. Brown, assistant director of fine and practical arts, Philadelphia, Pa., public schools, was named second vice-president, representing supervisors.

New president of the American Council on Industrial Arts Teacher Education is Gerald Baysinger of Wayne University, Detroit, Mich. Mr. Schmidt was named vice-president and Milo T. Oakland, head, department of industrial arts, Northern Illinois State Teachers College, DeKalb, was elected executive secretary. C. Robert Hutchcroft, Oswego State Teachers College, is treasurer.

The American Council of Industrial Arts Supervisors named Merrill A. Hamburg of Detroit as chairman with Kenneth W. Brown as vice-chairman and J. Osborne Johnson of Denver, Colo., secretary-treasurer.

Highlights of the meetings were the series of workshops dealing with the practical problems of the supervision of industrial-arts work, the presentation of the first yearbook of the American Council on Industrial Arts Teacher Education, and the numbers of college students and shop teachers who attended the sessions which were especially planned for them. ★

G. S. WALL has recently been appointed associate professor of industrial education at Stout Institute, Menomonie, Wis.

ROBERT S. FERGUSON, VIE assistant state supervisor for Alabama, has resigned that position to accept that of production planning specialist at Redstone Arsenal, Huntsville, Ala.

I. B. PITTMAN, supervisor of shop teachers in the Petersburg, Va., schools, has been named president-elect of the Virginia Vocational Association.

ALBERT KOSLOFF, head of the technical department of Waller High School in Chicago, Ill., is the first professional man to have been made an honorary member of the Screen Process Printing Association, in recognition of his contributions in this field.

HARVE WOBBE, teacher of photography in the Essex County Vocational and Technical High School, Newark, N.J., is the recent winner of a $2,000 prize in a photography contest sponsored by *Photography* magazine.

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Model T-14
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News

HAPPENINGS IN INDUSTRIAL EDUCATION

Indiana Association Elects

AT the meeting of the Indiana Industrial Education Association at French Lick in March, Lester Cunningham, director of vocational education, Gary, Indiana, was elected president and Paul Lightle, Fort Wayne, Indiana, High School, was named vice-president. H. G. McComb, state supervisor of trade and industrial education, was reelected secretary-treasurer. Mr. McComb reports convention attendance at 560 and membership as past the 700 mark.

Shop Planning Contest Draws Entries

A SCHOOL-SHOP layout contest being conducted by the Delta Power Tool Division of the Rockwell Manufacturing Co., Milwaukee, Wisconsin, has produced over 4000 entries to date, according to John Claude, special school representative. The contest, which officially closes July 31, is open to shop teachers, administrators, and college students. Prizes and award winners will be announced at the American Vocational Association convention in Boston next December.

New England Group to Meet

THE New England Industrial Arts Association has announced that its convention will be held at Portland, Maine, November 7-8, 1952, at the Eastland Hotel. The theme of the convention will be "Industrial Arts and Community Resources."

New Jersey Group Has New Officers

THE New Jersey Section of the American Vocational Association elected the following officers at its meeting in Asbury Park on March 19: president, Owen Kiser, state supervisor of agriculture, Trenton; vice-president for trades and industry, John Bambara, Bloomfield; vice-president for distributive education, John Barbour, Red Bank; vice-president for industrial arts, Richard O. Harthman, Jersey City; vice-president for life membership, Samuel Martin, Elizabeth; and vice-president for agriculture, Clarence Davenport, Mt. Holly.

IA Awards Judging at Dearborn

JUDGING for the Ford Industrial Arts Award program will take place in July at Dearborn, Michigan, instead of at Chicago as in former years. Prizes valued at more than $45,000 will be given contestants with entries closing this month.

Projects will be rated on the national level only this year with winning projects displayed at the Museum of Science and Industry, Chicago, Illinois, from August 1 to September 14.

New Buildings in Kansas

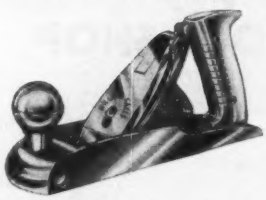
THREE new buildings are now under construction in Kansas to house industrial-education facilities. Arkansas City is building a new vocational shop building 250′ by 42′ to supplement the present facilities in the high school. An addition to Wichita High School East to house vocational-education classes is now under way measuring 410′ by 140′. A new vocational building is being constructed at Winfield in the form of an "E."

EDITOR'S NOTE: William E. Warner of Columbus, Ohio, requests that we correct an item in our news columns in April. He is not "formerly" of Ohio State University but has been granted a leave of absence.

Convention Calendar

Georgia Vocational Association, Municipal Auditorium, Savannah, June 9-10.
Louisiana Vocational Education Conference, Baton Rouge, June 10-13.
International Graphic Arts Education Association, Madison, Wis., June 29-July 2.
Colorado Vocational Association, Fort Collins, Colo., August 18-20.

School Shop Favorites



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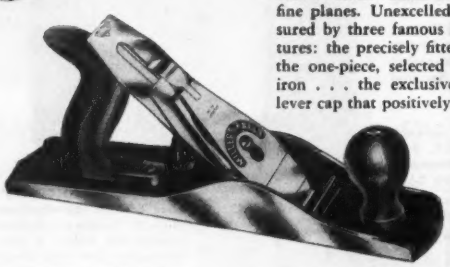
NO. 14 JACK PLANE. A tradition among fine planes. Unexcelled performance assured by three famous Millers Falls features: the precisely fitted cutter cap . . . the one-piece, selected tool steel cutter iron . . . the exclusive 3-point-bearing lever cap that positively prevents chatter.



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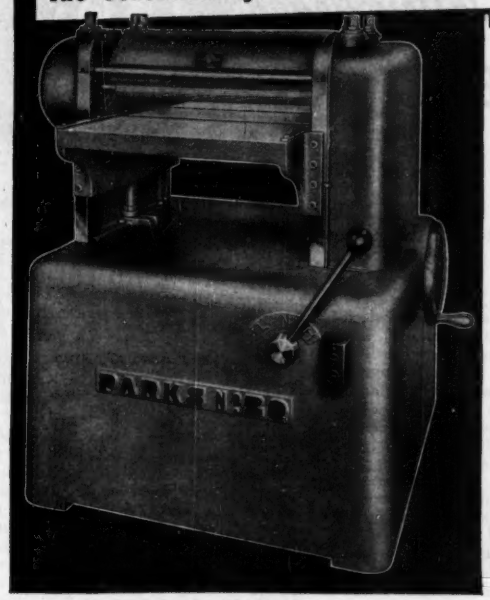

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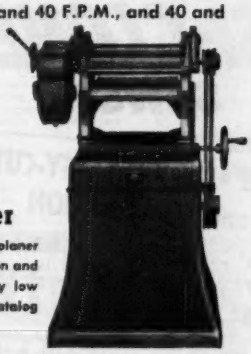

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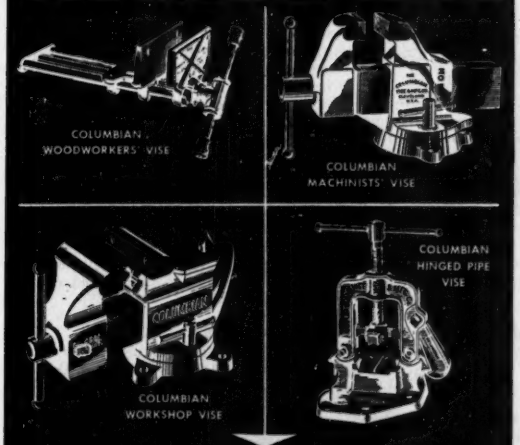

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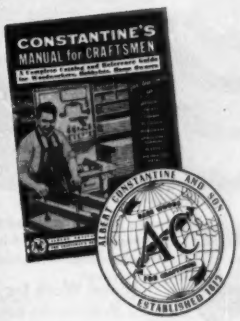

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Instructional RESOURCES

Books:

Essentials of Industrial Education. Mays. New York: McGraw-Hill Book Co., Inc., 1952. Pp. ix+248. $3.75.

This book provides a background which is essential to intelligent participation in the development of industrial education. It emphasizes the fact that since social, economic, and industrial conditions are changing constantly, it is important that those engaged in this field be alert to recognize these changes so that they may modify what they do to keep it in harmony with them.

Important historical facts are presented in the book, the aims of industrial education are considered, and the various types of classes are discussed.

The book is designed primarily to be used as a college text, in classes in which students are being prepared for teaching in industrial education. However, it will serve as an excellent reference for educators in other fields who are interested in obtaining a broad view of education.

Dr. Arthur B. Mays has been active in the field of industrial education for over 40 years. For the past 30 years he has been Professor of Industrial Education at the University of Illinois.

The Recording and Reproduction of Sound. Read. Indianapolis: Howard W. Sams & Co., Inc., 1952. Pp. xv+790. $7.95. (2nd Edition.)

This book consists of a comprehensive treatment of the many phases of sound recording and reproduction. There are 800 pages of pertinent facts related to the subject, and these are illustrated by 700 charts and pictures. It will serve as an excellent reference book for service men, and it merits a place in the library of every school where courses in radio are being offered.

Dr. Oliver Read is editor of two important magazines in the field of radio-electronic engineering.

Metal Work for Industrial Arts Shops. Barich & Smith. Chicago: American Technical Society, 1952. Pp. 96. $2.00.

This book presents a happy combination of fundamentals and their application to projects which range from simple to complex. It contains an interesting description of the steel industry, with a rather complete analysis showing the occupations in or related to it.

A chapter is devoted to a discussion of the need for planning each project before work is started on it. Other chapters deal with different metals, measuring, lay-out work, and design. Suggestions are included on shaping and forming of metal, as well as on its decoration.

The book is well illustrated and should serve as a text in junior-high schools where art-metal work is being taught.

Dewey F. Barich was formerly Professor of Industrial Arts at Kent State University and now is Manager of the Ford Industrial Arts Awards Program. Leonard C. Smith is Assistant Managing Editor, American Technical Society.

School Shop Planning Manual. Plainfield, N.J.: Walker-Turner Division, Kearny and Trecker Corp. 1952. $1.00.

Teachers and administrators responsible for the planning of new shop facilities will find this spiral-bound manual of great help. It includes a general discussion of factors to be considered in planning both general and unit shops, suggested equipment lists for various shop areas, and an extensive template section which planners will find useful as the templates are printed on heavy stock so that they may be cut out and placed on floor plans for various types of shops.

Television Servicing. Mandl. New York: The Macmillan Co., 1952. Pp. 421. $5.50.

In this book the first two chapters are devoted to fundamentals. It contains also a master index of trouble symptoms, and the exact procedures to be followed in correcting them are indicated. The latest circuits are illustrated and explained.

The review questions at the end of each chapter should prove helpful if the book is being used as a text.

Matthew Mandl is a Lecturer in Electronics and Television at Temple University, Philadelphia, Pa.

Pamphlets:

Industrial Arts in Pennsylvania. Bulletin 331. 1951. This bulletin is issued by the Pennsylvania State Department of Education, and is intended to provide school administrators, supervisors, and teachers in that state with ideas on providing, organizing, and conducting industrial-arts work.

Audio-Visuals:

Walls Without Welds is a new film in Technicolor produced by the Jam Handy Organization of Detroit for the National Tube Division of the United States Steel Co. The film illustrates the making of seamless steel pipe and tubing in a step-by-step procedure from iron ore to finished product. Information is available from the National Tube Division, Frick Bldg., Pittsburgh 30, Pa., on showing the picture to trade and technical societies, high schools, universities and similar groups.

CORRECTION: In our April listing of New Books in Industrial Education, we incorrectly gave the price of *Servicing TV in the Customer's Home*, published by Howard W. Sams, as $20.00. This price should have been $1.50.

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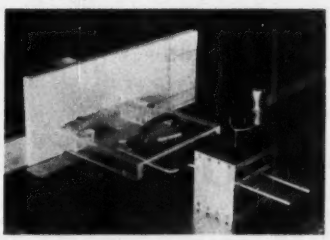

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TV and Industrial Arts

By Harold Hainfeld

With new television channels now unfrozen there will be more educational programs on the air. Here is a suggestion for utilizing them in shop classes by a teacher at the Roosevelt School, Union City, N. J.

HAVE you considered the possibilities of using certain television programs to supplement your instruction in industrial arts and in guidance? While the number of educational telecasts now presented is limited, teachers, students, and adults can benefit from those offered. Recently, the Educational Television Committee, when requesting channels for educational purposes, pointed out that only 5 percent of current commercial television programs were of value to education.

Following the hearings before the Federal Communications Commission, 10 percent of the channels in the newer ultra-high-frequency band were allotted to education. How long will it be before these stations are in operation? It takes time, money, and personnel to build these facilities and put programs on the TV screen. In the meantime, why not use some of the excellent telecasts now offered during this interim period of development?

The industrial-arts teacher has a limited, but helpful number of television programs that can aid in his teaching. While reference is made to programs originating in New York, Newark, and Chicago, many are carried by co-axial cable to outlets in other cities and also originate in other areas.

One of the aims of industrial-arts training is to better living conditions in the home. Upper-elementary and high-school classes, and older students taking industrial-arts as part of adult-education programs can benefit from telecasts such as the "Better Homes Show" televised over WJZ-TV, channel 7 in New York City and carried to many eastern cities.

The scenes of the "Better Homes Show" take place in the basement workshop of Norman Brokenshire. Here, with an adequate supply of tools, he demonstrates to his neighbors, the Wil-

Norman Brokenshire explains a project on the "Better Homes Program" over WJZ-TV. Similar programs are aired in the mid- and far west.

sons, many projects that others can use. Plans, outlines, and step-by-step procedures are televised on this half-hour program. Industrial-arts teachers and students can get helpful suggestions for projects that can be built in school, adult-education classes, or at home. The program recently received the *Television Guide* award as the outstanding home improvement program on television.

A similar program, "Better Homes

(*Continued on page* 31)

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An exclusive new *automatic air unit* makes possible the super speed of the Heston & Anderson Swing Saw. May be used with wood, metal or plastic. Compact and, sturdy, its superb construction insures accuracy with every cutting. Easy to operate! Here is truly the finest equipment for your plant or work shop.

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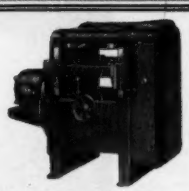

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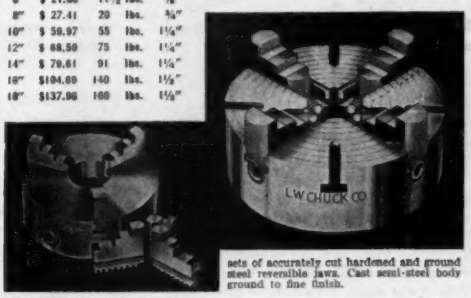
14"	$ 79.61	91 lbs.	1¼"
16"	$104.80	140 lbs.	1½"
18"	$137.96	160 lbs.	1½"



sets of accurately cut hardened and ground steel reversible jaws. Cast semi-steel body ground to fine finish.

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Fit any lathe having 1½"-8 thread spindle. Using back adapter plate, they mount on any size or type. Fit L-W 6½" SD Dividing Head. 3 tough hardened steel pinions. Two sets of accurately cut hardened and ground steel reversible jaws. Cast semi-steel body ground to fine finish.

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Make Pilot Holes for Screws, Brads, Nails with the "Yankee" Automatic Push Drill. Reverse spin action clears chips. Improved chuck . . . drill points can't pull out. Magazine handle holds 8 drill points — 1/16th to 11/64ths.

Send for **FREE** "Yankee" Tool Book and handy reference chart showing relation of screw driver blades to screw sizes, and information on accessories that add to the utility of "Yankee" Spiral Screw Drivers. North Bros. Mfg. Co., 206 West Lehigh Ave., Phila. 33, Pa.

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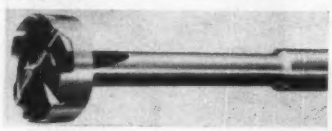
News from INDUSTRY

PTI Bit Offers Longer Sharpness, Longer Life



The new PTI bit is said to be new in both design and performance, and features a quick-locking detachable ring which allows ring and cutter to be sharpened independently with a grinding wheel. With this bit wood can be drilled at any angle, regardless of grain structure, and any arc of a circle can be drilled.

The ring is a closed circle for cleaner cutting and the elimination of tearing or splitting the wood. Between the cutting edges is a wide open space to eliminate choking with chips. Chip breakers break up the shavings.

The PTI bit is a product of PTI, Inc., of 401 Broadway, New York 13, N.Y., and is available in sizes from ⅝" to 1½". For more information, write PTI mentioning SCHOOL SHOP; *or check no. 75 on the coupon.*

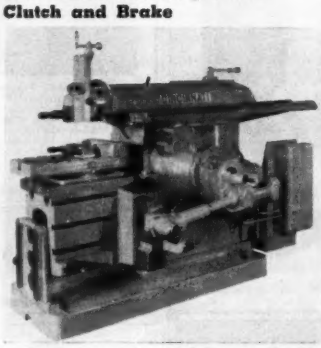
Boice-Crane Drill Presses Have New Advantages

The 1650 Series drill presses now being marketed by the Boice-Crane Company feature a new development on drive-belt alignment devices. These are said to be the only presses offering a two-way drive aligner-belt tensioner. Perfect alignment is assured and belt tension is instantly released for speed changing.

Every involute designed, six-tooth splined drive part, including the pulley drive sleeve, is made of steel to insure quiet running and longer life. A new type guard covers the pulley spindle, which is guaranteed true running by four heavy grease-sealed ball bearings. An extra wide selection of speeds is available in two ranges, 500, 925, 1750, 3250, and 5500 in the high and 425, 775, 1330, 2200, and 3440 in the low.

A new brochure describing and illustrating this new line of drill presses will be sent to anyone writing Boice-Crane Company, 938 Central Ave., Toledo 6, Ohio, mentioning SCHOOL SHOP; *or check no. 76 on the coupon.*

New Cincinnati Shaper Has Clutch and Brake



The Cincinnati Shaper Company announces a new shaper equipped with an electro-magnetic clutch and brake. These new features are said to insure instant starting and stopping with a finger-tip control lever. The ram can be positioned quickly and accurately for setting tools by the instant action of clutch and brake.

The clutch and brake are said to operate without grab and are powerful and smooth. There is no adjustment required for the life of the friction surfaces which are estimated to last up to 15 years of normal operation. Torque remains constant throughout the operating life.

To obtain more information write The Cincinnati Shaper Company, Hopple & Garrard Sts., Cincinnati 25, Ohio, mentioning SCHOOL SHOP; *or check no. 77 on the coupon.*

Magna Offers Useful Shop Accessories

Three new Shopsmith accessories have been announced by Magna Engineering Corporation, each featuring multi-shop usefulness.

The Rust Preventive Spray protects all exposed iron or steel surfaces and comes in a pressurized can that simplifies application.

Liquid Adhesive, developed by Armstrong Cork Co., is a sanding disc adhesive. It is pressure sensitive. A brush applicator is attached to the cap.

Magna-Lube is a specially designed cup grease. It comes in a tube with a nozzle tip which makes the grease clean to use, and easy to apply. It is formulated for Magna by Standard Oil Company of California.

All three items are available at Shopsmith dealers and more information may be obtained by writing Magna Engineering Corporation. Menlo Park, Calif., mentioning SCHOOL SHOP; *or check no. 78 on the coupon.*

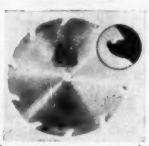
New Blow Torches Operate on Red or White Gas

The Clayton & Lambert Mfg. Co. has announced the production of blow torches capable of using either leaded or nonleaded gas as fuel.

Without any special care, the 32A-1 and 600A-1 torches will operate successfully on red gas, making it no longer necessary for the user to procure white gas. He can use the same gas he uses in his car or truck, the manufacturer states.

For details write The Clayton & Lambert Mfg. Co., Louisville 10, Ky., mentioning SCHOOL SHOP; *or check no. 79 on the coupon.*

Carbide Tipped Safety Blade for School Shops



The Big Four Carbide Tool Company has currently introduced a new carbide - tipped safety saw blade that is said to be ideally suited to the school shop. This safety blade incorporates an anti-kick back feature which operates with less effort. The carbide tips also assure longer life.

This blade is available for all sawing operations from 5⅞" diameter to 16" diameter for portable electric, hand, or chain-fed machinery.

For more information write the Big Four Carbide Tool Company, 5938 Carthage Ave., Cincinnati 12, Ohio, mentioning SCHOOL SHOP; *or check no. 80 on the coupon.*

Model "600" Added To Pyramid Amprobe Line

The Pyramid Instrument Corporation announces the latest addition to the line of Amprobe snap-around volt-ammeters—the model "600," which combines six ammeter ranges and three volt-meter ranges in one pocket-size instrument: 0-15/30/60/150/300/600 amps, ac, and 0-150/300/600 v ac.

The Amprobe "600" measures current instantly without interrupting the circuit or shutting down equipment. Six engineering and design advancements are incorporated in this model.

Descriptive material is available by writing the Pyramid Instrument Corp., Lynbrook, N.Y., mentioning SCHOOL SHOP; *or check no. 81 on the coupon.*

New Literature:

The 1952 Heathkit Catalog fully illustrates and describes in detail the many models of Heathkits—said to be the most complete line of radio test equipment in kit form. Among these kits are oscilloscope, voltmeter, generator, tube and condenser checker, receiver and amplifier models. For more information write the Heath Company, Benton Harbor, Mich., mentioning SCHOOL SHOP; *or check no. 82 on the coupon.*

Each item listed above is numbered. Check the numbers of the items you want, and mail the coupon, properly filled in, to . . .

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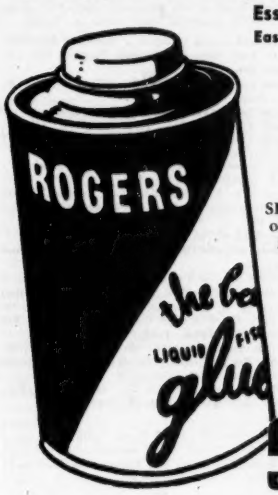

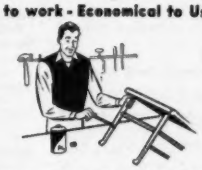

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A heavy-type Jointer that is ideal for school shops

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70 ILLUSTRATIONS
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Elements of Electrical Drawing is a work book of ten drawing projects. Each project is accomplished in a number of easily understood steps. Each step is explained by simple drafting instructions and accompanied by a concise paragraph on the technical data implied. This information is invaluable in making certain that the learner understands the why and how of the operation of the equipment being drawn. Key plates for checking the accuracy of all drawings is included as an appendix. This book is the result of many years of experience in teaching the subjects of electricity and drafting. It is recommended for vocational-technical, as well as engineering schools. It is a valuable training aid in the teaching of electrical drawing. For those who place strong emphasis on blue print reading courses, "Elements of Electrical Drawing" will be found useful as a supplement for the former.

CONTENTS

General Drafting Instructions
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2. A.C. Split-Phase Induction Motor.
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Key Plates for checking work.

ELECTRO TECHNICAL PUBLISHING COMPANY
P. O. Box 227 Manchester, Conn.

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Washington . . . . *from page 32*

of the Washington set-up for vocational education. The seethings and the questions (why not name Ward Beard permanent head?) will continue through the summer. By Fall, we may have a new —and happier—story to tell.

Industry Beckons.—Each year Ray C. Maul, of the NEA, takes a close look at the supply and demand of teachers throughout the nation. This year again, as in previous years, his major finding is that colleges and universities are graduating too few elementary-school teachers, a few too many high-school teachers.

But the story in industrial arts is different. Last June, colleges and universities in 26 states had graduated 1817 young men (mostly) as industrial-arts teachers. Only half of them took jobs in public-school systems. The remainder either could not find jobs as teachers or else preferred to go elsewhere. Although this is a sampling figure, Dr. Maul believes that the proportions hold true for the entire country—that is, only one out of every two industrial-arts graduates finds his way into the profession.

Dr. Maul's statistical instruments enable him to see many other facts. For example, he knows that the man who is asked to teach industrial arts as a major assignment is frequently given other school tasks. The most common combinations are to teach industrial arts and mathematics; industrial arts and social science; industrial arts and physical education; industrial arts and general science.

Dr. Maul claims that one of the marks of a profession is a reasonable balance between the number of qualified practitioners and the number which can be absorbed by school systems. If you accept this, things are not well squared off in the industrial-arts field. He estimates that this June a little over 3000 industrial-arts teachers will be graduated, but that only half of these will find their way into the school shops of the nation.

If more industrial-arts leaders ponder these facts, Dr. Maul believes, teacher-training institutions on one hand and young men on the other would be able to plan more intelligently the ways in which a reasonable balance between supply and demand for industrial-arts teachers could be maintained.

Not Enough Shops.—Another investigator has taken a close look at the condition of America's school houses. (Verdict: nearly 40 percent of America's school buildings are "unsatisfactory.") The startling fact to emerge from this

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survey of school facilities is that nearly 14 percent of the high schools and half of the elementary schools do not have school shops. These statistics cover only 25 states, but Ray Hamon, of the U.S. Office of Education, believes that the facts would hold true for the country as a whole. ★

TV . . . . *from page 24*

and Gardens," is televised on Friday evenings over WATV, Newark, N.J.

In the midwestern states, "Walt's Workshop" is a regular feature of NBC's Chicago WNBQ, and is typical of the education programs which existing facilities can provide.

Since students very often do their homework together and in many cases visit one another's homes to watch television programs, let them benefit from such associations. Assigning desirable programs can bring information and ideas of value to them.

By taking advantage of programs now available that are of educational value and by writing to stations for information on program content, teachers will encourage more and better programs of this type. To ignore the offerings of commercial television tends to result in more cowboy pictures, more wrestling, and more torch singers on the video screen. Urge your students to see and comment to the station and in class on the telecasts that can be educationally profitable to them. ★

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By MICHAEL PACA

Beard Replaces Gregory.—Somebody's head *had* to roll. The fates, egged on by Congressional committees, decreed that it should be the head of Raymond W. Gregory.

He is no longer assistant commissioner for vocational education. His place has been taken (for the time being) by Ward P. Beard, veteran vocational educator.

Ever since that gentleman from Virginia, Porter Hardy, made his scathing criticism of the federal vocational education division it was clear that something drastic would have to be done to regain the respect which vocational education once enjoyed on Capitol Hill and in the states.

Beginning in October, 1951, Commissioner of Education McGrath took a series of actions: Internal surveys by staff members. . . . Surveys by outside experts headed by J. B. Perky of Oklahoma. . . . Staff proposals for reorganization. . . . Considerations of new philosophies for service. . . . And, finally, on April 15, the sudden reassignment of Dr. Gregory to be "special assistant to the commissioner" (he'll probably work on international aspects of vocational education) and the call on Dr. Beard to carry the heavy duties of realigning the division until a permanent chief is appointed.

The Background.—Now to back up a bit.

No federal agency can ignore the kind of stinging rebuke that Rep. Hardy and his investigators handed the federal vocational division. Their "Observations and Conclusions," published after the investigation, bristled with such phrases as "procedures used in reviewing state plans are not clear-cut," "little or no coordination," "poor administration," "insufficient supervision."

Commissioner McGrath took these criticisms seriously. And well he might. Congress did also. This fact came out when the House appropriations subcommittee acted on the 1953 vocational-education budget. The chairman of that group, Rep. Fogarty, clearly had in mind the weaknesses revealed by the Hardy report when he said that the money granted for 1953 should be used to complete a thorough study of the program of each state "with the purpose not only of determining where the states may have deficiencies but also to determine where there may be weak points in the administration at the federal level."

Then Mr. Fogarty added words the significance of which were clear to everyone in the Office of Education: "The (appropriations) committee expects to go into this matter again when the next request for funds is before it." In other words, the 1954 budget depended on how well Mr. McGrath could prove that he had corrected the errors of the vocational division's past.

No Perky Committee Report.—The appointment of the seven-member committee headed by J. B. Perky was one of the efforts to set aright the work of the division. It was assumed that the group would make a formal and written report. Instead, the group decided to put nothing on paper. It insisted that its members talk behind closed doors to Commissioner McGrath only. It would, therefore, be bumptious to ask, "What did Mr. Perky say to Mr. McGrath?" It is also unnecessary. We know now that McGrath has decided to make a clean sweep; that he wanted no half-measures in his efforts to revise the internal structure of the affected division and in his search for new procedures which would be more satisfying to Congress and to the states.

What Next?—Now the vocational education division has to agree anew on a philosophy for service. Which should it be?

1. Should Washington serve the states primarily through a field staff made up of *all-purpose* men and women, empowered to review all programs and operations of a state vocational activity?

2. Or, should the field staff be made up primarily of *specialized* agents to give professional service only to their counterparts in the states?

Washington officials have spent many hours trying to find the best answer to these questions. They lie behind the several "plans" for reorganizing the vocational division which have been considered during the past months. They are still unanswered as this Letter goes to press, although the feeling is that eventually the division will agree on the specialized-agent philosophy.

"It'll be an about face to the days before 1946," said one official. But there will be no hesitancy about making the reversal if it will really help the states.

Congress Cuts.—McGrath's fears that Congress may crack down on his 1954 budget are not based on illusion. Congress has already taken unkind cuts at his 1953 budget, affecting services of long standing. The House appropriations committee whittled down $50,000 needed for current work. Therefore, says McGrath, it was necessary for him to wipe out the guidance branch of the Office of Education, ably served for many years by Harry Jager and Walter Greenleaf. And because Congress has all but eliminated money for business education, McGrath says he is forced to dismantle part of the business-education service.

The events of this month, therefore, will have a profound effect on the future

(*Continued on page* 30)

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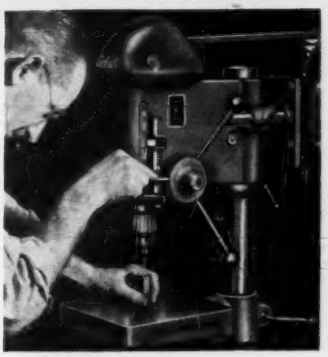

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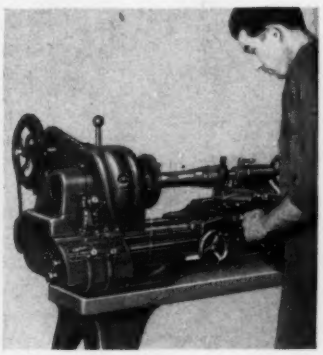

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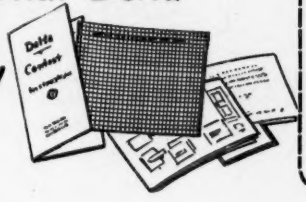

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